DSSD CENSUS 2000 PROCEDURES AND OPERATIONS MEMORANDUM SERIES R-1

MEMORANDUM FOR Howard Hogan
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Subject: Accuracy and Coverage Evaluation Survey: American Indian Reservations Sample Design

I. INTRODUCTION

The purpose of this memorandum is to present the sample design for American Indian Reservations (AIR) in the Accuracy and Coverage Evaluation (ACE). The planned sample allocation is designed to maximize reliability of the AIR ACE estimates while also controlling AIR weight variation among the states. Table 1 in the attachment gives the AIR block cluster sample allocation for each state. These allocation targets could change due to operational resource constraints or random sample size variation.

II. SAMPLE DESIGN

The following are features of the planned AIR sample design for the ACE:

- A total of 355 block clusters are allocated to AIR. Based on reference 1, we originally allocated 350 block clusters to AIR, but adjusted that to 355 to control weight variation.

- The originally planned number of 350 block clusters for AIR were allocated to each state proportional to the population of American Indians on reservations. We assumed that the distribution of American Indians on reservations across states does not change between 1990 and 2000. Since we cannot sample partial block clusters, we used standard rounding procedures to determine the number of block clusters sampled for each state. Table 2 in the attachment contains the unrounded expected number of AIR block clusters and the rounded number of AIR block clusters for each state for the originally planned 350 block clusters.

- The 355 block cluster allocation was reached by adding block clusters to Idaho, Michigan, and Oklahoma to control weight variation. The AIR weights for these states would be unacceptably high in comparison to the other states without the additional block clusters. Adding these block clusters and deducting a block cluster from Arizona give AIR a total of 355 sampled block clusters. Table 2 in the attachment presents details about this adjustment.

- Ten of the 36 states that have at least one AIR are not a part of the 355 block cluster allocation due to a small population of American Indians on reservations relative to other states. The AIR in these ten states will be sampled in the general population.

- For the 26 states which have an AIR allocation, the AIR sampling stratum will consist of both medium and large AIR block clusters. We will not do large-block subsampling in AIR. Note that medium block clusters have three to 79 housing units and large block clusters have 80 or more housing units.

- Small AIR blocks will be sampled in the state's small block stratum. However, small blocks in AIR will not be included in the general small-block subsampling operation. Also, small blocks in Tribal Designated Statistical Areas, Tribal Jurisdiction Statistical Areas, and Alaskan Native Village Statistical Areas but not in AIR will not be part of the general small-block subsampling operation to control weight variation for the American Indian poststrata, which will include all American Indians on reservations and on these other American Indian areas. Note that small block clusters have zero to two housing units.

- Tribal Designated Statistical Areas, Tribal Jurisdiction Statistical Areas, and Alaskan Native Village Statistical Areas are not a part of the 355 block cluster allocation due to low American Indian population density in these areas. We propose using native statistical area when sorting the block clusters in the nonAIR sampling strata to control sample size variation in those areas.

- A separate AIR stratum will be formed within each state consisting of block clusters on AIR. The Take Every (TE) for this stratum will be calculated as:

$$TE = \frac{\text{Number of Block Clusters in AIR Stratum}}{\text{AIR Block Cluster Sample Size}}.$$

- For block clustering, we will respect all AIR boundaries except when a block crosses an AIR boundary. If that happens, we will include the whole block as part of the AIR universe.

The planned AIR block cluster allocation that takes into account the above criteria is given in Table 1 in the attachment. With this allocation, the expected coefficient of variation (CV) for American Indians on reservations is approximately equal to 3.2 percent, which is based on the 1990 CV adjusted for sample size, weight variation, and a limited surrounding block search.

III. REFERENCE

[1] Schindler, E. (1998) "Allocation of the ICM Sample to the States for Census 2000," *Proceedings of the Survey Research Methods Section, American Statistical Association*, Alexandria, VA, American Statistical Association, to appear.

cc:

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Table 1. AIR Block Cluster Allocation

State	Block Clusters	1990 American Indians on Reservations
Alabama[1]	0	149
Alaska	1	1,209
Arizona	113	142,238
Arkansas	0	0
California	11	13,602
Colorado	2	2,063
Connecticut[1]	0	79
Delaware	0	0
DC	0	0
Florida	1	1,517
Georgia[1]	0	16
Hawaii	0	0
Idaho	6	5,896
Illinois	0	0
Indiana	0	0
Iowa[1]	0	564
Kansas	1	988
Kentucky	0	0
Louisiana[1]	0	261
Maine	1	1,482
Maryland	0	0
Massachusetts[1]	0	1
Michigan	5	2,996
Minnesota	10	12,472
Mississippi	3	3,932
Missouri	0	0
Montana	24	30,424
Nebraska	3	3,521
Nevada	5	5,854
New Hampshire	0	0
New Jersey[1,2]	0	0
New Mexico	70	87,659
New York	5	6,272
North Carolina	4	5,388
North Dakota	12	15,284
Ohio	0	0
Oklahoma	8	6,088
Oregon	3	4,013
Pennsylvania	0	0
Rhode Island[1]	0	17
South Carolina[1]	0	124
South Dakota	27	33,931
Tennessee	0	0
Texas	1	688
Utah	7	8,577
Vermont	0	0
Virginia[1]	0	100
Washington	17	21,794
West Virginia	0	0
Wisconsin	10	12,483
Wyoming	5	5,676
Total	355	437,358

[1] States contain AIR population, but not AIR sampling stratum. AIR people will be given a chance of selection in the general state sample.

[2] New Jersey AIR had no population in 1990.

Table 2. AIR Block Cluster Allocation Adjustments

State	Expected Block Clusters	Block Clusters before Adjustment	Weights before Adjustment	Block Cluster Adjustment	Weights after Adjustment
Alabama[1]	0.12	0	NA		NA
Alaska	0.97	1	14.5667		14.5667
Arizona	113.83	114	11.5980	-1	11.7006
Arkansas	0.00	0	NA		NA
California	10.89	11	56.4697		56.4697
Colorado	1.65	2	54.6833		54.6833
Connecticut[1]	0.06	0	NA		NA
Delaware	0.00	0	NA		NA
DC	0.00	0	NA		NA
Florida	1.21	1	24.5333		24.5333
Georgia[1]	0.01	0	NA		NA
Hawaii	0.00	0	NA		NA
Idaho	4.72	5	73.9067	1	61.5889
Illinois	0.00	0	NA		NA
Indiana	0.00	0	NA		NA
Iowa[1]	0.45	0	NA		NA
Kansas	0.79	1	17.6000		17.6000
Kentucky	0.00	0	NA		NA
Louisiana[1]	0.21	0	NA		NA
Maine	1.19	1	15.8333		15.8333
Maryland	0.00	0	NA		NA
Massachusetts[1]	0.00	0	NA		NA
Michigan	2.40	2	168.7833	3	67.5133
Minnesota	9.98	10	43.2833		43.2833
Mississippi	3.15	3	9.7222		9.7222
Missouri	0.00	0	NA		NA
Montana	24.35	24	27.0236		27.0236
Nebraska	2.82	3	29.2667		29.2667
Nevada	4.68	5	13.9467		13.9467
New Hampshire	0.00	0	NA		NA
New Jersey[1,2]	0.00	0	NA		NA
New Mexico	70.15	70	16.0857		16.0857
New York	5.02	5	34.4867		34.4867
North Carolina	4.31	4	14.2083		14.2083
North Dakota	12.23	12	17.0167		17.0167
Ohio	0.00	0	NA		NA
Oklahoma	4.87	5	102.2800	3	63.9250
Oregon	3.21	3	16.6889		16.6889
Pennsylvania	0.00	0	NA		NA
Rhode Island[1]	0.01	0	NA		NA
South Carolina[1]	0.10	0	NA		NA
South Dakota	27.15	27	19.4728		19.4728
Tennessee	0.00	0	NA		NA
Texas	0.55	1	7.3000		7.3000
Utah	6.86	7	40.6619		40.6619
Vermont	0.00	0	NA		NA
Virginia[1]	0.08	0	NA		NA
Washington	17.44	17	55.5941		55.5941
West Virginia	0.00	0	NA		NA
Wisconsin	9.99	10	35.7833		35.7833
Wyoming	4.54	5	54.3533		54.3533
Total	350.00	349[3]		6	

[1] States contain AIR population, but not AIR sampling stratum. AIR people will be given a chance of selection in the general state sample.

[2] New Jersey AIR had no population in 1990.

[3] After rounding, the total block clusters summed to 349 for AIR instead of 350.